

## **ABSTRACT**

The present invention provides a method for transmitting Ethernet service signals in a Wavelength Division Multiplexing (WDM) network, comprising: a Center receiving Ethernet service signals and transmitting the signals to a transmission channel; a receiving station receives the Ethernet service signals, performs a space-division cross operation upon the received signals, duplicates the signals into two copies, wherein one is locally downloaded while the other is returned to the transmission channel. Three devices for processing the Ethernet service signals in the WDM network are provided. With the present invention, the broadcast of the Ethernet service signals with large granularity is implemented, therefore decreasing the delay for broadcast the real-time services; besides, it is not necessary anymore to construct a overlapped network with three layers of devices, i.e. a WDM system, a Synchronous Digital Hierarchy (SDH) system and a data device, so the network structure is simplified and management is convenient.